Reply Affidavit of
Richard Schmalensee
and William Taylor

AFFIDAVIT OF RICHARD SCHMALENSEE AND WILLIAM TAYLOR

COMMONWEALTH OF MASSACHUSETTS)
) SS:
COUNTY OF MIDDLESEX)

Richard Schmalensee and William Taylor, being duly sworn, depose and say:

Richard Schmalensee is the Gordon Y. Billard Professor of Economics and Management at the Massachusetts Institute of Technology (MIT), Interim Dean of the MIT Sloan School of Management, and Director of MIT's Center for Energy and Environmental Policy Research. William Taylor is a Senior Vice President of National Economic Research Associates, Inc. (NERA), head of its telecommunications economics practice and head of its Cambridge office.

We filed direct comments on behalf of SBC Communications, Inc. ("SBC") and Ameritech Corporation ("Ameritech") assessing the proposed merger of SBC and Ameritech to determine the likely effect of the merger on consumers and competition in the telecommunications markets served by them. Our direct comments were filed on July 24, 1998.

We have been asked by SBC and Ameritech to review and comment on the direct comments filed by other parties. Our comments are in the attached report.

Richard Schmalensee

William Taylor

Subscribed and sworn to before me this 11th day of November, 1998.

Notary Public

REPLY AFFIDAVIT CONCERNING THE PROPOSED

SBC-AMERITECH MERGER

Report of Richard Schmalensee and William Taylor
National Economic Research Associates, Inc.
November 12, 1998

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REPLY COMMENTS OF RICHARD SCHMALENSEE

AND

WILLIAM TAYLOR

I. THE MERGER WILL NOT REDUCE POTENTIAL COMPETITION.

1. An economic analysis of the effects of a proposed merger on the public interest necessarily begins with the customer. A merger should not be considered contrary to the public interest unless it is likely to result in higher prices or lower output for consumers. Competitors have asserted that "SBC and Ameritech are in a very small if not unique set of likely entrants"[1] and that the merger would be likely to result in higher prices or lower output in the future due to the elimination of this source of potential competition. However, (i) there is no evidence of actual or potential competition between SBC and Ameritech in local exchange services, and (ii) if a sufficient number of actual or potential competitors remain in the market after the merger, removal of one potential competitor would have no significant effect on prices and output.

A. Potential competition theory.

2. Counting potential competitors comes about because it is widely-recognized that, "if more than a few firms have the same or a comparable advantage in entering the market, the elimination of one firm is unlikely to have any adverse competitive effect." For enforcement purposes, the Agencies use three as the standard for "more than a few."[2] In assessing the number and sufficiency of potential competitors, the Commission must distinguish between a potential competitor and an actual competitor. It would not be correct to treat likely potential competitors as if they had entered the market and the merger was entirely horizontal between

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[1] Petition to Deny of Sprint Communications Company L.P., CC Docket No. 98-141, October 15, 1998 ("Sprint") at 10.

[2] See §4.133 of the 1984 *Merger Guidelines*.

actual, current competitors. Removing a potential competitor from the market through merger has a less of an effect on prices and output than does removing an existing competitor. First, the effect on competition of the loss of a potential competitor can only be determined conditionally on a number of predictions about the future: whether the firm would have entered in the first place, at what scale it would have entered, when it would have entered, what other firms would find the market conducive to entry, what impact that entry would have had on other potential entrants, and what otherwise-unavailable contribution the independence of the potential competitor would make to the terms of competition and ultimately to prices and quality in the market. Offset against these hypothetical predictions are the relative certainties of lower prices and higher quality through economies of scale and scope, resulting from the merger.

3. Second, a firm that is actually competing in the market can reasonably be assumed to be a more effective competitor than an otherwise identical potential entrant because—in contrast to a mere potential entrant—the presence of a firm in the market shows that the firm has overcome whatever barriers to entry might exist and has resolved its own internal investment priorities in favor of committed investment in the market in question. In general, a present market benefit should carry more weight than a possible benefit from some possible, future market structure. Competition by firms already in the market is presumptively beneficial because those firms have already passed a market test; potential competition by firms that have not yet entered a market carries no such presumption.

4. Even in its current form, the potential competition doctrine rests on shaky grounds: the successful blocking of a merger entirely on grounds of harm to potential competition is virtually unprecedented. The blocking of a proposed merger is particularly shaky on public policy grounds when the market in question is both (i) rapidly growing and extremely dynamic in terms of new technology, new entry and globalization and (ii) regulated so that service prices are generally regulated and prices of services required by competitors are set at regulated, cost-based rates. A merger of potential competitors in such a market does not reduce the effective number of potential competitors because entry is rapid as demand grows and technology

changes, and a reduction in the number of potential competitors does not effect prices and quantities in the market in the same way as it does in a stable, unregulated market.

B. Application of potential competition theory.

5. In its Bell Atlantic-NYNEX decision,[3] the Commission determined that there were only five significant competitors in New York—AT&T, MCI, Sprint, Bell Atlantic and NYNEX. Circumstances have changed since that determination. However, AT&T and Sprint each assert that SBC and Ameritech was the most significant potential entrant into the other's territory and that CAPs, CLECs, cable companies and wireless companies remain less significant potential entrants, as do IXCs.[4]

6. Non-adjacent RBOCs: Although US WEST, Bell Atlantic, GTE and BellSouth are established and well-qualified local telephone companies, the Commission discounted them as most significant precluded competitors in its Bell Atlantic-NYNEX Order because they lacked a specific reputation and customer base in New York.[5] However, circumstances are different in this case. First, compared with the Bell Atlantic-NYNEX case, the proximity or adjacency of their current wireline service territories is much less a particular advantage that SBC and Ameritech might have as a potential entrant in the other's markets. The only shared border is Illinois with Missouri, and St. Louis is the only major market on that border. Of the RBOCs and GTE, only Bell Atlantic was close to New York City, while SBC is no closer to Chicago than US WEST, BellSouth or GTE. GTE, of course, serves roughly 60 percent of the territory in Illinois.

7. Second, entry by other non-adjacent RBOCs is made more likely by the merger. Under the assumptions of the National/Local Plan, the Companies' facilities-based entry into the largest 30 MSAs to follow their largest business customers will likely trigger reciprocal entry into

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[3] Memorandum Opinion and Order, FCC 97-286, released August 14, 1997, ("Bell Atlantic-NYNEX Order").

[4] See, e.g., Sprint at 11-18 or AT&T at 25-27.

[5] Bell Atlantic-NYNEX Order at ¶93.

Chicago and St. Louis by out-of-region ILECs. At least two of those companies, Bell Atlantic and GTE, have advanced their own version of the National/Local strategy, with plans to enter major metropolitan areas around the country.

8. Third, a significant distinction in the current merger is that there is nowhere near the overlap in media markets experienced in New York and Northern New Jersey. SBC does no marketing of its LEC brand in Chicago, and Ameritech markets only its cellular brand in the St. Louis MSA Thus, Ameritech—the wireline carrier—is not likely to be the second choice wireline local exchange carrier for SBC customers in St. Louis, and SBC is even more unlikely to be the second choice wireline local exchange carrier for Ameritech customers in Chicago.

9. Competitive Access Providers: CAPs were determined to have no brand name reputation in the residential market and limited financial resources to pursue mass markets.[6] Since that decision, the largest CAPs have been acquired by IXCs (MFS, TCG, Brooks Fiber) which eliminates both problems. IXCs will be able to use their mass residential market presence to sell CAP facilities to business and residential customers and will provide more than adequate financial resources to market their services. In counting potential competitors, then, these changes must not mask the effect of the results on competition. A simplistic and incorrect application of the Bell Atlantic-NYNEX arithmetic would leave the number of significant precluded competitors unchanged at 3: AT&T, MCI WorldCom and Sprint. However, the acquisitions of MFS, Brooks Fiber and TCG have greatly enhanced the capabilities of AT&T and MCI/WorldCom to compete in local exchange markets, and an accurate predictor of post-merger competition would have to reflect their particular advantages as entrants.

10. Cable MSOs: Cable MSOs were determined not to be significant precluded competitors because they had a poor reputation in mass consumer markets and because their technology did not readily lend itself to supplying telephone services. Market circumstances have changed in two important ways. First, the growing demand for packaged local exchange services including Internet access has benefited the cable MSOs because they can supply high capacity Internet

[6] Bell Atlantic-NYNEX Order at ¶88.

access to residential customers more rapidly than the incumbent telephone companies. Second, the proposed AT&T/TCI merger reduces doubt in the technological ability of cable companies to supply local exchange telephone services at a profit. Third, AT&T is looking to partner with other cable companies to offer local telephone service, with its goal of reaching 60% of the U.S. households.[7]

11. The Smaller Interexchange Carriers: Small IXCs (WorldCom and smaller) were determined not to be significant precluded competitors because only the largest 3 IXCs were deemed to have the capability to serve the mass market, and only 3 IXCs had experience in residential service (Bell Atlantic-NYNEX ¶83). The growth of WorldCom since the Bell Atlantic-NYNEX decision suggests that—but for the WorldCom/MCI merger—the FCC would have found four significant precluded local exchange competitors if it had applied its standard to current circumstances. This assumption is particularly likely because—in addition to its increasing share of the interLATA toll market—WorldCom is uniquely poised to enter local exchange markets through its MFS and Brooks Fiber acquisitions.

12. Other Entrants: Significant events since the Bell Atlantic-NYNEX Order have added to the number of potential entrants in other categories. For example, supported by a $100 million investment by Nippon Telephone and Telegraph, Teligent has announced roll-out of digital fixed wireless services to small and medium businesses in 10 major markets. QWEST has continued to expand its backbone fiber network and has acquired LCI which gives it presence in retail long distance and CLEC markets.

13. In sum, there are more significant potential competitors in SBC-Ameritech local exchange markets than those identified by the Commission in its Bell Atlantic-NYNEX Order. The significant IXC competitors it identified there are more significant today, having vertically integrated with CAPs into the local exchange market. Unlike Bell Atlantic-NYNEX, other RBOCs and GTE have as much claim to whatever advantages adjacency might bring as SBC

[7] "AT&T Eyes More Cable Deals," *Cable World*, Vol 10, No. 43, October 26, 1998, at 1.

and Ameritech have, cable companies are providing Internet access, and new combinations of local and long distance carriers and new technologies are entering local markets.

C. Are SBC and Ameritech significant precluded competitors in Chicago and St. Louis?

14. The IXCs assert that—but for the merger—SBC would have entered Ameritech territory in Chicago and Ameritech would have entered SBC territory in St. Louis and possibly Texas and California. In its Bell Atlantic-NYNEX decision, the Commission determined that Bell Atlantic was both a precluded competitor and among the most significant market participants in the mass markets for local exchange services and bundled services in LATA 132. It reached this conclusion based on Bell Atlantic's entry studies and reached it without finding the level of commitment (for example, actual investment) that the *Merger Guidelines* and case law suggest is indicative of a sufficient intention to enter to warrant treating entry as likely for antitrust purposes.

15. As we explained in our July 21, 1998 Comments, SBC and Ameritech would have no unique advantage over other potential entrants in entering each other's local exchange market. IXCs, other CLECs and cable companies already have wireline networks, customer relationships and brand recognition in Chicago and St. Louis and have strongly and clearly expressed their intentions to enter the local exchange markets to provide services complementary to their current offerings. And even if SBC's and Ameritech's cellular properties were thought to be useful platforms from which to compete for wireline local exchange services, after the merger divests overlapping cellular companies in Chicago and St. Louis, neither Ameritech nor SBC would have even these platforms and facilities or customers from which to build a business.

16. A far more likely set of entrants are the newly integrated IXCs—CAPs. Because they have facilities, reputations, complete packages of services (including interLATA services) and existing customer relationships with every household in the region, they begin with a considerable advantage over an out-of-region RBOC. Indeed, many of these CAPs have

already begun to provide services in direct competition with SBC and Ameritech (see the accompanying affidavit of Mr. Kahan)

17. Ameritech had no plans to enter St. Louis on a facilities basis, and the absence of such plans makes economic sense. We are unaware of any geographic market in which a cellular or PCS provider has entered the wireline local exchange business as a facilities-based carrier, and the absence of such entry is consistent with the rationality of Ameritech's decision to enter St. Louis, if at all, as a reseller.

18. Moreover, to the extent that Ameritech's plans to enter St. Louis were confined to resale, consumers will not be harmed if those plans are not implemented. Ameritech's entry was motivated by its need to retain its cellular customers in the face of competition from packages of local and cellular services it expected its wireless service competitors to offer. The strategy of a wireless carrier reselling wireline local exchange service is similar to the test SBC deployed in Rochester, New York, which proved to be unsuccessful. Indeed, the results of that test led SBC to conclude generally that entry into local exchange from a wireless platform was an unprofitable strategy which should not be pursued.[8] Because there are many other actual and potential resellers of local exchange service in St. Louis, local exchange customers are unlikely to harmed if the Ameritech strategy is not implemented.

19. Sprint's version of the events surrounding Ameritech's consideration of wireline entry in St. Louis[9] does not change this analysis. Nor does it imply that Ameritech was a most significant precluded competitor in St. Louis or that the merger would diminish potential competition in that local exchange market. The important facts remain that consideration was given only to (i) marketing bundled cellular and local exchange services in response to perceived bundled offerings of wireless competitors and (ii) resale of SBC local exchange service. Facilities-based entry was not contemplated, so the adjacency of the wireline territories was irrelevant. Unlike

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[8] The decision to deploy the National/Local strategy independently of wireless operations, even in cities such as Washington, D.C. where SBC has an existing cellular operation, confirms this conclusion.

the Bell Atlantic-NYNEX case, the Ameritech brand name was marketed in St. Louis only in connection with wireless services and for only four years after changing the brand from CyberTel. There are several other actual and potential participants in St. Louis as significant as Ameritech, including MCI-MFS-WorldCom and AT&T-TCG-TCI which combine facilities-based metropolitan area networks with customer relationships with more than two-thirds of the residential and business customers in St. Louis. Finally, if it were thought that cellular service in St. Louis were a uniquely positioned platform from which to enter the local exchange market, the required divestiture of one of the cellular properties ensures that the platform will remain in place after the merger.

II. THE MERGER DOES NOT INCREASE THE LIKELIHOOD OF DISCRIMINATION.

20. Like mushrooms after rain, competitors of the merging parties raise familiar arguments purporting to show that the merger will increase the ability and incentive of the merging parties to engage in various forms of anticompetitive behavior. Some of these arguments pertain to conduct in local exchange markets and some—supposing the merged parties to have received interLATA authority throughout their regions—to long distance markets. MCI and Sprint focus on non-price discrimination while AT&T apparently fears price discrimination. We address each of these areas of concern below, emphasizing the points raised by the theoretical analysis of Katz-Salop on behalf of Sprint.[10]

(...continued)

[9] Sprint at 11-17.

[10] M.L. Katz and S.C. Salop, October 14 1998, Attachment B to the Sprint Petition, ("Katz-Salop").

A. The merger would not affect the likelihood of price discrimination.

21. AT&T (at 31-34) and MCI (at 24) claim that the merger would increase the incentive and ability of the merged company to engage in a price squeeze[11] because the merger would give the combined RBOC

> control over both the origination and termination of a far higher percentage of interLATA calls than either individually controls today. Any increase in the percentage of calls that originate and terminate in a single region increases the incentive and ability to engage in a price squeeze (AT&T at 32).

While Sprint estimates that the combined firm would terminate 45 percent of the calls that originate in-region and asserts that the merger would raise that proportion for Ameritech by 15 percentage points,[12] we demonstrate below that the increase in the combined SBC/Ameritech in-region originating and terminating proportion is only six to seven percentage points. Further, irrespective of the change in the proportion of originating traffic that terminates in-region (the "in-region proportion"), the merger does not change the likelihood of a price squeeze in the interLATA long distance market.

22. The Commission has found previously that providing access for the originating and terminating ends on "a substantially greater proportion of individual interexchange telephone calls than either Bell Atlantic or NYNEX does separately" does not increase the likelihood of anticompetitive behavior[13] and that an increase of "only six to seven percentage points" in the

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[11] The IXCs refer to two different circumstances as a price squeeze. The ordinary economic definition is to price a retail service below the sum of its incremental cost and the forgone contribution from selling an essential service to competitors for the retail service. The second use of the term appears in AT&T's Comments (footnote 34) and refers to an ability to price a retail service profitably at a lower level than competitors because of revenue received from selling an essential service at a price above incremental cost.

[12] Sprint Petition at 25.

[13] Bell Atlantic-NYNEX at ¶118. AT&T claims (Comments at 33) that the Commission is "mistaken" in this conclusion because the increase in the proportion of originating calls that terminate in-region will give the ILEC an "even greater pool of monopoly rents available on a call to effectuate the price squeeze." On the contrary, a price squeeze relies on the margin between the price charged for the essential facility (access) and the retail toll price, not on the

(continued...)

in-region proportion likewise poses no threat to competition.[14] As a factual matter, the current merger falls into the range experienced with SBC – PacTel. Based on estimates of originating and terminating calls submitted to the Department of Justice in this matter, the proportion of calls currently originating in the combined SBC-Ameritech territories and terminating in-region increases from 37.2 percent to 44.1 percent after the merger. Table 1 shows the breakdown of 1997 interLATA traffic by company of origin and termination.

Table 1
InterLATA Usage by Company of Origin
(billions of 1997 minutes)

	Origin *SBC*	***Origin*** *Ameritech*	***Origin*** *NEWCO*
Terminus			
SBC	19.61	2.70	22.31
Ameritech	2.46	8.10	10.56
NEWCO	22.07	10.80	32.87
Terminate In-Region	19.61	8.10	27.71
Total Originating	47.50	27.00	74.50

Prior to the merger, SBC and Ameritech originated 74.5 billion interLATA minutes of use, of which 27.71 billion (37.2 percent) terminated in-region, as the regions are defined today.[15] After the merger, of the 74.5 billion originating minutes, 32.87 billion (44.1 percent) would

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(...continued)

profitability of the ILEC. Interstate access charges are regulated by the Commission, and the merger will not effect their level at either end of the call.

[14] SBC/PacTel Merger Order at ¶53.

[15] That is, SBC originated 47.5 billion minutes in 1997, of which 19.6 billion (41.3%) terminated in the SBC region. Ameritech originated 27 billion minutes of which 8.1 billion (30%) terminated in the Ameritech region. Of the 74.5 billion minutes originated by SBC and Ameritech, 27.7 billion (37.2%) terminated in the region in which they originated.

terminate in the combined regions. The merger thus increases the in-region proportion by about 6.9 percentage points.

23. From an economic perspective, this increase is competitively irrelevant. Given the requirements in Sections 251 and 252 of the Telecommunications Act, we discuss below the facts that (i) ILECs have no practical ability or incentive to engage in price or non-price discrimination against long distance competitors and (ii) control over both the originating and terminating end of a call imparts no additional ability or incentive.

24. Quantitatively, the increase in the in-region proportion is in a range previously found to be competitively benign, and the level of that proportion in the post-merger company, 44.1 percent, is comparable to that in the current SBC region and other regions and significantly less than that in BellSouth.[16] Hence, the in-region proportion in the merged company does not exceed the range of in-region proportions of RBOC traffic that existed at the time of the passage of the Telecommunications Act of 1996.

25. For a merger to increase the likelihood of a price squeeze, there must be some ability or incentive to undertake such an action in the first place. AT&T argues that ILECs have an ability and incentive to engage in vertical price squeezes because their access services are priced above cost, and they (or their long distance affiliates) will not effectively pay those access prices (at 31-32). Rather, AT&T says, the portion of the access price above cost amounts to an intra-company transfer payment so that ILECs can profitably underprice AT&T's retail services even if their costs are higher than AT&T's (at 32, especially footnote 32).

26. These assertions are nothing more than a familiar but elementary economic error. The ILEC entity as a whole is far from indifferent about the contribution[17] from access. When AT&T carries the interLATA call, the ILEC receives the contribution from access. When the ILEC—or its affiliate—carries the call, the ILEC entity no longer receives the contribution from

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[16] Jack B. Grubman, et. al., Salomon Brothers, January, 1996.

[17] Contribution is defined as the excess of price over incremental cost.

AT&T. While the payment from the ILEC affiliate to the ILEC for access is a transfer payment and—in some respects—a matter of indifference to the ILEC-as-a-whole, the absence of AT&T's contribution is a loss of real net income that occurs because the ILEC carries the call rather than an IXC. A prudent manager responsible for the ILEC's total profitability must include that opportunity cost of access contribution forgone as a real and important cost of providing retail long distance service. If, for example, the contribution from access were greater than the contribution from retail long distance service, total ILEC profits would fall every time the ILEC affiliate managed to win a new long distance account.

27. Economic theory shows why a price squeeze would be an unlikely event in the present circumstances. Assuming there are no alternatives to ILEC carrier access service, an interLATA price squeeze consists of pricing retail long distance service below the sum of the incremental cost of long distance and the contribution from carrier access.[18] In the short run, at least, a price squeeze thus reduces the ILEC's profits. Like predatory pricing, a price squeeze can only be profitable if, by undertaking it, the ILEC can (i) drive its interLATA competitors from the market and (ii) erect sufficient barriers to entry so that competitors will not be able to reenter the market when it attempts to raise its retail interLATA prices to recoup its lost profits.

28. Both elements of that scenario are unlikely in interLATA long distance markets. AT&T, MCI WorldCom and Sprint are large, global companies with deep pockets having sunk ubiquitous facilities (switches and optical fiber transport) throughout the country. Long distance traffic originating in SBC and Ameritech territory amounts to about a third of U.S. originating traffic, and, as the Commission has recognized,[19] regional anticompetitive pricing

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[18] At any price above this level, an IXC can purchase access from the ILEC and if its non-access costs are no greater than the non-access costs of the ILEC, the IXC can profitably compete against the ILEC's retail price.

[19] "At least three interexchange carriers—AT&T, MCI, and Sprint—have nationwide or near-nationwide facilities. These are large well-established companies with customers throughout the nation. It may be unlikely, therefore, that a BOC affiliate, whose customers presumably would be concentrated in one geographic region, could drive one or more of these companies from the market" *Notice of Proposed Rulemaking*, FCC 96-308, ("Non-Discrimination Safeguards NPRM"), released July 18, 1996 at ¶137.

could not reduce IXC profits sufficiently to drive them from the long distance market. IXCs use their facilities to supply services other than retail switched long distance service that originates in-region,[20] and even if a price squeeze in switched long distance (based on control of switched access services) were to drive the IXCs out of the switched services market, they and their facilities would remain in place, preventing the ILEC from raising long distance prices to recoup its losses.[21]

29. Second, irrespective of the recoupment argument, AT&T gives three reasons why "Applicants can profit by engaging in a price squeeze even if they do not drive major IXCs out of the market."[22] Each is incorrect. First, AT&T asserts that the ILECs place such a premium on quick and substantial entry into long distance in order to offer a full range of services that they are willing to forgo profits and undertake a price squeeze. However, in this theory, there is no hope of recoupment. After the ILEC tires of losing money in the toll market and raises its price back to a compensatory level, if it is inefficient, it would no longer be able to compete with the IXCs' bundled services. By investing money in a price squeeze, the ILEC has not assured itself of a compensatory flow of profits from any market for individual or bundled services. Second, AT&T claims there is a window—currently open—when access charges remain above cost that enables the ILEC to earn monopoly profits from access. AT&T then claims that ILECs have an incentive to price squeeze now to establish themselves in the long distance market which will be more profitable in the long run. The argument recommends economic folly. While the hypothetical window is open and access services can be sold at a high margin, a profit-seeking company should supply access, not the long distance service it would supply under a price squeeze. When long distance services offer "better long-term

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[20] For example, private network services for large business customers and termination of interLATA calls from other regions.

[21] "Even in the unlikely event that [a BOC affiliate] could drive one of the three large interexchange carriers into bankruptcy, the fiber-optic transmission capacity of that carrier would remain intact, ready for another firm to buy the capacity at a distress sale and immediately undercut the [affiliate's] noncompetitive prices" Non-Discrimination Safeguards NPRM at ¶137.

[22] AT&T Comments, footnote 34.

profits and opportunities," the firm should supply long distance. Third, AT&T claims a price squeeze can be profitable because a price squeeze with lower long distance prices stimulates demand which "increases competitors (*sic*) usage of access facilities." As we show elsewhere, the ILECs' incentives to reduce toll rates produce welfare gains to society that more than offset potential welfare losses from possible inefficient entry into long distance markets.[23] Long distance prices are currently far above the price squeeze level, and customers will benefit substantially from any additional competition in long distance that lowers those rates.[24]

30. The IXCs' price squeeze fears are unfounded for factual reasons as well. The simple assumption that IXCs must purchase ILEC switched access services for all of their traffic is simply wrong. This is particularly true for AT&T which owns TCG (the nation's largest CAP) and MCI/WorldCom which owns MFS and Brooks Fiber. Practically since divestiture, IXCs have been using dedicated access facilities—self-supplied or purchased from CAPs or from the ILECs' special access tariffs—to serve their high volume customers. In addition, access competition from CLECs is proliferating. There are currently more CLECs than ILECs in the U.S.,[25] and in the first quarter of 1998, CLECs added more business access lines than all of the Bell Operating Companies combined.[26] The competitive position of the CLEC industry has reached in two years what took MCI over ten years to achieve after long distance markets were

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[23] See P.J. Hinton, J.D. Zona, R.L. Schmalensee and W.E. Taylor, "An Analysis of the Welfare Effects of Long-Distance Market Entry by an Integrated Access and Long-Distance Provider," *Journal of Regulatory Economics*, March 1998, pp. 183-196.

[24] Prices for high-volume business users are quite competitive, but average prices for residential customers far exceed any measure of incremental cost. For example, the domestic interstate direct-dialed rate paid by AT&T customers in 1998 averaged between 16 and 17 cents per minute while carrier access charges averaged 4.04 cents per minute: P.S. Brandon and W.E. Taylor, "AT&T, MCI, and Sprint Failed to Pass Through the 1998 Interstate Access Charge Reductions to Consumers," filed *ex parte* in CC Docket No. 96-262 on behalf of the United States Telephone Association, October 22, 1998.

[25] 1,429 CLECs holding 2,844 competitive local exchange certificates compared with 1,332 ILECs, according to the *State Telephone Regulation Report*, Vol. 16, No. 19, September 18, 1998 at 1.

[26] Salomon Smith Barney Report, "CLECs Surpass Bells in Net Business Line Additions for First Time," May 6, 1998.

opened to competition.[27] The current consolidation among the largest IXCs and CAPs also ensures that IXCs can self-supply carrier access service to many customers without dependence on ILEC access services. Analysts expect WorldCom—through its previous acquisitions of MFS and Brooks Fiber—to provide MCI with more than 70 percent of its access capacity, and AT&T, through its purchase of TCG, is expected to avoid a significant portion of ILEC access services. [28] In addition, IXCs can avoid ILEC access services by purchasing the network elements of carrier access service from the ILEC at regulated prices set at forward-looking economic cost.

31. These facts have not escaped the notice of regulators whose task it is to regulate the prices alleged to be discriminatory. In several recent decisions, the Commission has reiterated its belief that "(p)rice discrimination is relatively easy...to detect," and is "therefore unlikely to occur" and that its system of safeguards is sufficient to prevent anticompetitive pricing.[29] The Commission has also expressed skepticism regarding the effect of a merger on the ability and incentive to price anticompetitively:

> While we agree with MCI that the merged entity will provide both originating and terminating services on a substantially greater proportion of individual interexchange telephone calls than either Bell Atlantic or NYNEX does separately, it is not apparent how the merger increases the likelihood of a successful price squeeze. The combined firm will provide access services in precisely the same instances as did the two firms separately.[30]

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[27] *Ibid.*

[28] Salomon Smith Barney, "WorldCom, Inc. Company Report," April 9, 1998 and Prudential Securities, "AT&T Company Update," January 21, 1998.

[29] SBC/PacTel Order at ¶53. See, e.g., *Access Charge Reform Order*, FCC 97-158 at ¶¶280-282 and Bell Atlantic-NYNEX at ¶117.

[30] Bell Atlantic-NYNEX at ¶118.

B. The merger does not increase the likelihood of non-price discrimination.

32. On behalf of Sprint, Drs. Katz and Salop make a theoretical argument that (i) SBC has a financial incentive to discriminate against its competitors in the supply of access (carrier access for IXC competitors and UNEs or resale for CLEC competitors) and (ii) the merger with Ameritech would increase that incentive.[31] This argument was rejected in the Bell Atlantic-NYNEX Order, (at 120) where the Commission observed that

> (i)n theory, each applicant could. albeit unlawfully, currently engage in non-price discrimination within its own territory. Although the merger increases the number of instances in which the same incumbent LEC is the access provider at both ends of an interexchange call, opponents of the proposed merger have not indicated how this could increase Applicants' incentive or ability to engage in non-price discrimination. For the most part, non-price discrimination practiced at one end of a telecommunications circuit (origination or termination) would seem to be sufficient to harm a competitor. In any event, non-price discrimination is a violation of several provisions o the Communications Act, including those requiring Bell Companies to provide interexchange service only through a separate subsidiary, not to favor their subsidiaries, and to provide nondiscriminatory access to all long distance carriers.

Katz-Salop attempt to resurrect this theory—in our opinion, unsuccessfully.

33. Two separate assertions are involved here: (i) that the LEC has the ability and the incentive to use control of a local exchange bottleneck to undertake anticompetitive acts in the long distance and CLEC markets, and (ii) that a merger of two LECs increases either this ability or incentive. In general, Katz-Salop assert that

> Rival carriers require access from multiple ILECs in order to compete efficiently. The merger of two ILECs increases their incentives and ability to foreclose access to competing carriers because it allows each ILEC to capture the anticompetitive benefits that spillover to the other ILEC. (at ¶61).

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[31] Katz-Salop at ¶10.

The incentive for discrimination stems from the allegedly higher margin that ILECs earn from retail local exchange and toll service than from access service,[32] and the merger is alleged to increase that ability and incentive because it internalizes the out-of-region externality from anticompetitive acts.

34. At the outset, there are several problems with the application of this theory to an assessment of the benefits and costs of a merger. First, all of these theoretical claims are entirely speculative and hypothetical. While Sprint claims that these effects are "large" or "significant," nothing in the Katz-Salop paper tells us whether the incentive to discriminate is large relative to the cost or whether the change in that incentive due to the merger is large or small. Certainly no corroborative evidence is presented to assess the likelihood of such illegal behavior. Second, neither SBC nor Ameritech has yet been granted interLATA authority in any state. The Commission can properly address any question of alleged discrimination against long distance competitors in a Section 271 proceeding, not the current merger proceeding.

35. Third, SBC and Ameritech have strong disincentives to engage in discriminatory behavior: it is illegal, and it would prevent them from entering and remaining in the interLATA business. In the Katz-Salop formula, that disincentive is captured in the expected sanctions term "*S*(d)" which, like the caboose of a train, always appears at the end but never drives the result. In their illustrative numerical example (at ¶¶45-54), every element of the *Net Gain* equation (eqn. 4) is carefully quantified to two decimal places except for *S*(d) which is tossed off at the end with the phrase "(i)n the light of imperfections of regulation, the fear of regulatory sanctions is unlikely to dominate the incentives to exclude" (at ¶53). In spite of the imperfections of regulation, it is perfectly reasonable that the desire to obtain and keep interLATA authority—where retail

[32] Katz-Salop (at ¶52 and Appendix A) estimate that for combined business local exchange and long distance, the retail margin exceeds the access margin by $37.50 per month. Note that there is a tension between this result (that the retail margin exceeds the wholesale margin) and the assertions made by AT&T (at p. 31) and MCI (at 24, Baseman-Kelley at ¶¶41-42) that the anticompetitive behavior of concern is a price squeeze. In a vertical price squeeze, the margin for the retail service is necessarily smaller than that for the wholesale access service. Thus the incentives discussed by Katz-Salop and the price squeeze concerns of the IXCs cannot both be correct, at least in the same market at the same time.

margins are relatively large, according to the calculations of Katz and Salop[33]—would dominate the incentives to exclude competitors from the exchange and exchange access markets (where margins are alleged to be relatively small).

36. Finally, no explanation is provided for how such non-price discrimination can simultaneously be effective for retail customers but imperceptible to competitors, regulators or courts. IXCs and CLECs have a strong interest—backed up with technically powerful tools—to detect network troubles, and they have every incentive to bring problems to the attention of the ILEC, the regulator or the court. Ignoring the problem of legal and regulatory sanctions, as a competitive strategy, such non-price discrimination is a multi-edged sword. The ILEC risks driving its largest customers—AT&T/TCG, MCI WorldCom/MFS/Brooks Fiber and Sprint—to seek other alternatives for exchange access services. Inasmuch as there are competitive access alternatives, avoiding or resolving complaints from these high-volume customers is obviously a serious priority that SBC and Ameritech pursue in their own self-interest. In addition, in order to benefit from such discrimination, the ILEC's potential customers would have to be aware of its higher service quality. Customers of competing IXCs or CLECs typically would not understand that service quality improvements could be obtained by switching to the ILEC's services, but the discriminating ILEC could not easily advertise or freely market the higher quality of its local exchange service or the long distance service of its affiliate without risking detection.

37. The arguments are fundamentally different for local and long distance competition which we take up one at a time.

a) Non-price discrimination against IXCs.

38. To be applicable to a merger, the alleged discrimination from control of the local exchange when originating and terminating access is provided by the same LEC must be greater than when originating access is provided by one LEC and terminating access by another. Katz and

[33] Katz-Salop at 31 and Appendix A.

Salop claim that an IXC requires access at both ends of the call, and that if the ILEC at the terminating end degrades that access, then an ILEC competing with the IXC at the originating end will also benefit. Similarly, AT&T claims that the merger would "greatly" increase the efficacy of a price squeeze by controlling the origination and termination of a "far higher" percentage of interLATA calls than either party currently controls (at p. 32).[34] We have already shown that the percentage of interLATA calls that the merged company would handle at both the originating and terminating ends will not increase significantly with the merger and, in fact, will diminish as local competition increases. In addition, there are several problems with the IXCs' claims.

39. First, as discussed above, there are no known methods to degrade service to competitors selectively so that customers can perceive differences in quality that cannot be detected by competitors, regulators and the courts.[35] An additional difficulty is that the same switches, data bases and trunks provide service to the ILEC's retail customers and to its competitors, and the ILEC's competitors sometimes carry the ILEC's own retail traffic.[36] Even recent advances in technology do not permit the ILEC to identify the retail service provider for each call and, on the fly, degrade the quality of its competitors' calls but not its own.[37]

40. Second, assuming selective degradation were possible, the ability to degrade service quality at one end of the call would be sufficient as the FCC recognized in the passage from its Bell

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[34] AT&T cites no mechanism to explain why control over origination and termination of a higher percentage of calls affects the ability to undertake a price squeeze, except for the nonsensical comment that Applicants would have a greater pool of monopoly rents (presumably regulated access charges) available on a call to effectuate the price squeeze (at 33). It makes no sense to object to the Applicants' taking steps that would reduce their costs on the grounds that the lower costs would produce higher profits that could be used to underwrite illegal behavior.

[35] See the accompanying Reply Affidavit of William C. Deere.

[36] For example, the RBOCs have generally contracted with facilities-based IXCs to carry their out-of-region interLATA traffic on a resold basis.

[37] Mr. Deere's affidavit discusses in detail the technical impossibility of this kind of discriminatory behavior.

Atlantic-NYNEX Order cited above. If twice as much noise on the line would be more profitable, the ILEC could simply apply that additional noise or provisioning delay to the originating end rather than applying half the amount to two ends.

41. Third, the ILEC has no incentive to degrade the quality of terminating access. It competes with IXCs for originating toll service and receives no strategic benefit from discriminating against their terminating traffic, even assuming such discrimination were possible.[38] Long distance carriers receive revenue for calls that originate on their network and pay originating carrier access charges to the LEC. In contrast, carriers receive no revenue from the terminating party for terminating a call and still pay terminating access charges to the terminating LEC. Retail long distance charges are generally assessed to the originating party while carrier access charges are assessed to long distance suppliers at both the originating and terminating ends. Noise on either end presumably irritates the paying customer on the originating end, increasing the likelihood that he would change carriers. Such activity should have no effect on the carrier choice of the terminating customer who generally receives calls carried by carriers selected by someone else. Only under some rare circumstances involving repeat calling, dissatisfaction at the terminating end of a call could affect the call originator's choice of a long distance carrier.

42. Fourth, absent the merger, SBC's degrading AT&T's access quality in St. Louis might harm, rather than benefit Ameritech's long distance affiliate in Chicago as Katz-Salop assume. Degrading an IXC's terminating access in St. Louis simultaneously degrades the service of any carrier who resells the IXC's long distance services out-of-region.[39] This external effect goes in the opposite direction from that assumed by Katz and Salop: discrimination against an IXC in St. Louis penalizes all the resellers serving Chicago that use that IXC to carry calls to St. Louis,

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[38] This fact is embedded in Section 271(b)(2) of the Telecommunications Act of 1996 where the RBOCs were permitted to terminate interLATA traffic they originated out-of-region before having met the checklist and other safeguards that pertain to in-region originating traffic.

[39] The ILEC cannot distinguish between IXC retail calls and IXC resold calls. Noise on the line in St. Louis would irritate retail customers of long distance resellers that use the IXC, including the RBOC affiliate of Ameritech.

including possibly the Ameritech long distance affiliate in Chicago. All else equal, when the merged RBOC internalizes this externality, its incentive to discriminate would be reduced—recognizing the relative harm its discrimination would cause to Ameritech's affiliate—rather than increased.

43. Fifth, the argument flies in the face of historical experience. There are many markets where dependent competitors have competed successfully against ILECs and their affiliates, despite their need to purchase interconnection or some other network service from the ILEC.[40] In the current setting, there is one particular market of interest. The IXCs have argued that the pre-merger in-region proportion (37.2 percent) and the increase in that proportion (6.9 percentage points) after the merger constitute a serious increase in the ability and incentive of SBC and Ameritech to engage in non-price discrimination. There is one long distance submarket—intraLATA toll—in which SBC and Ameritech each have terminated virtually every call they have originated for the past decade. 100 percent is substantially greater than 37.2 percent, and yet none of the concerns raised here have materialized: competition has grown and has not been impeded in that market.[41] When IXCs entered these markets in the past, they (i) started with a small initial market share, (ii) had few facilities within the LATA, so that long distance competition required substantial use of LEC access facilities, at least initially (iii) did not have complete dialing parity in any LATA, (iv) did not benefit from the unbundling required by Sections 251 of the Act, and (v) had to compete against inexpensive extended-area local calling within the LATA and overcome the imperfectly perceived differences between local and long distance calling. Even under these adverse circumstances, LECs are losing significant amounts of market share, particularly for large business customers that combine interLATA and intraLATA traffic on the same dedicated facilities. In comparison, BOC affiliates entering the interLATA business in-region would have only regional facilities and customer base, no dialing

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[40] Examples include cellular service, PCS, paging, voice messaging, customer premises equipment and intraLATA toll.

[41] See P.S. Brandon and R. Schmalensee, "The Benefits of Releasing the Bell Companies from the Interexchange Restrictions," *Managerial and Decision Economics*, Vol. 15 (July-August (continued...)

advantage (and no new mass presubscription balloting upon their entry), no initial market share, and an ability to serve only a fraction of the customers at both ends of the call.[42] The success of competition for intraLATA long distance is strong evidence that the theoretical problems of discriminatory treatment of BOC affiliates and their competitors are adequately addressed by existing regulatory safeguards.

44. There is no need to rely on abstract, unquantified, theoretical results to conclude that there is no significant danger of anticompetitive discrimination on the part of SBC or Ameritech in these markets. The industry has accumulated fifteen years of experience with LECs competing with firms in various telecommunications markets that depend on the LEC networks for interconnection, including intraLATA toll where the in-region proportion is 100 percent There is no evidence that LECs have succeeded in preventing or suppressing competition as an effective force in any of these markets.

b) Non-price discrimination against CLECs.

45. Katz and Salop recognize three possible mechanisms (at ¶¶70-72) by which discrimination against CLECs in supplying necessary access facilities in-region can reduce the likelihood of entry in other regions.[43] Economically, they boil down to the assumption that reducing the potential profit of an entrant in one region reduces its profitability of entry elsewhere. The model produces no evidence regarding the direction or magnitude of this effect.

(...continued)

1995), pp. 349-364 which found no complaints of anticompetitive RBOC behavior in the intraLATA toll markets.

[42] Out-of region, the BOC affiliates would have no customers, no brand name and no network.

[43] They are (i) CLECs must expect to recover common costs across regions so discrimination reduces the overall probability of successful entry, (ii) CLECs recover investment costs across regions and fewer customers in one region implies smaller or slower investment in other regions and (iii) CLECs have economies of scope which reduce variable costs. Thus reduction of volume in one region raises costs in other regions.

46. There are several theoretical problems with the Katz-Salop analysis. First, the economic results derive directly from implausible and arbitrary assumptions about the externalities resulting from discriminatory behavior. Discriminatory acts are assumed to be technically possible, profitable and undetectable. The discriminatory acts are assumed to have consequences outside the ILEC's territory, and it is only this secondary effect that is of concern in this model. Under the assumption that discrimination in St. Louis raises the cost of entry in Chicago, Katz and Salop show that when the RBOCs serving Chicago and St. Louis come under common ownership through merger and the merged ILEC takes such externalities into account, the gains from discrimination would be larger and more discriminatory behavior might take place. However, the examples of these external effects in Katz-Salop (at ¶¶67-74) are implausible. The long distance examples require that the ILEC be able to degrade selectively the quality of service to individual IXCs' trunks and even more selectively to the underlying retail carriers of traffic on those trunks. Picking an example from Katz-Salop (at ¶67), an exclusionary access policy by SBC towards IXCs will spill over and benefit any ILECs in other regions that compete in the long distance market without reselling IXC facilities. That list is a short one, and if discrimination is as rife as that contemplated by Drs. Katz and Salop, even facilities-based firms would provision retail customers through resale of other firms facilities simply to avoid discrimination.

47. Second, equally plausible external effects lead to the opposite policy conclusion—that by internalizing the externality, the merger will lead to <u>less</u> discrimination rather than more. Suppose an ILEC discriminated against a CLEC in St. Louis, preventing or raising its cost of entry. It is just as likely that such discriminatory behavior will lower the probability of successful CLEC entry in St. Louis and raise the probability that the CLEC will enter in Chicago. Individual CLECs do not serve every major market in the U.S., and they certainly do not enter all of the cities they intend to serve simultaneously. If all else is equal and the cost of entry in St. Louis were higher than that in an otherwise identical Chicago, it is certainly plausible that a substitution effect would raise the probability of entry into Chicago by more than an overall income effect would reduce the probability of entry everywhere. In this case, the externality from discrimination would be positive, and internalizing that incentive through the merger would reduce the incentive to discriminate rather than increase it.

48. A second example is the "multi-market dependence" identified by Katz-Salop (at ¶74) with Sprint ION. Mr. Agee's affidavit emphasizes that a substantial portion of ION costs are fixed, and the value of the network to customers increases with its size.[44] He concludes that lack of availability of ION in one region would reduce the value of ION to its customers and reduce the ability of Sprint to offer the service. Various forms of hypothesized discriminatory behavior are alleged to "weaken Sprint's ability to offer its ION suite of combined services." Presumably the point of the example is that Ameritech benefits from SBC's alleged acts to the extent that they lower the probability that Sprint successfully offers the service, and the merged company would take that those benefits into account.

49. As a practical matter, Mr. Agee's affidavit for Sprint shows graphically that the ION cart is far ahead of its horse in this proceeding.[45] That aside, the merged company might well anticipate that ION services would be offered earlier in Chicago because of the (hypothetical) nefarious acts in St. Louis and reduce its bad behavior after the merger instead of increasing it. In addition, the externality—whether positive or negative—would likely be small because the merged company, by itself, would not be large enough to make the multi-market roll-out of ION unprofitable by itself. Finally, an effect of the merger far more important for Sprint than the internalization of hypothetical spillovers from illegal anticompetitive acts would be beneficial, not harmful: the economies of scale in developing, negotiating and implementing the interfaces, protocols and other access services that Sprint believes it will need to launch its service ubiquitously (or at least in the major urban U.S. markets) benefit from dealing with fewer, larger local exchange companies. Any theoretical additional ability to discriminate against advanced services that requires coordination and rationalization (e.g., Sprint ION) would surely be offset by the efficiency gains from the reduced number of independent local

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[44] Affidavit of Gene Agee, Attachment F to Sprint's Comments, at 14.

[45] *Ibid.*, at 6-8. Much work remains to be done by Sprint before interconnection standards can be written: Sprint Service Nodes ("SSNs") must be deployed and innovative software must be written to offer voice service over a packet-switched network and to allocate bandwidth dynamically on customer demand. Sprint's billing and other support systems will have to modified.

exchange networks with which Sprint would have to negotiate to develop and implement the new access services it requires.

50. In summary, Katz and Salop show that mergers that internalize management decisions that impose externalities on the merger partner can cause behavior of the merged firm to change. Equally likely assumptions—the imposition of a negative externality on a merger partner, for example—can lead to the opposite conclusion: that the merger would reduce the offending activity rather than increase it. Even in theory, these effects are of second-order magnitude—i.e., of smaller consequence than the direct effects of the anticompetitive acts—and nothing in the exposition or the examples suggests otherwise. The record from previous ILEC merger decisions suggests that the Commission concurs:

> ...we do not believe, that, if SBC/PacTel were to practice unlawful non-price discrimination on these calls, the results would be a substantial reduction in competition or tendency towards monopoly in the relevant market, whether by reduced incentives for entry by CLECs or otherwise. In addition, if SBC/PacTel engages in non-price discrimination, regulatory remedies are available that may mitigate such abuses.[46]

III. THE MERGER DOES NOT REDUCE THE REGULATORS' ABILITY TO BENCHMARK.

51. The IXCs assert that the merger will reduce the number and quality of the benchmarks the Commission uses to regulate and should be rejected on those grounds.[47] Farrell-Mitchell outline three types of comparisons across firms upon which they claim the Commission relies: average-practice benchmarking, best-practice benchmarking and worst-practice benchmarking. They associate average-practice benchmarking with interstate price cap regulation (at 10) and

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[46] *In re Applications of Pacific Telesis Group and SBC Communications Inc.*, Memorandum Opinion and Order, 12 FCC Rcd, 2624, (1997) at ¶42 ("SBC/Telesis Order").

[47] AT&T at 28-31; MCI at 17-23; Sprint Petition at 32-41; and "Benchmarking and the Effects of ILEC Mergers: Declaration of Joseph Farrell and Bridger M. Mitchell," October 14, 1998 ("Farrell-Mitchell"), Attachment C to the Sprint Petition.

sizing the universal service fund (at 11), best-practice regulation with various technical requirements for interconnection, particularly the LRN method of local number portability, and worst-practice regulation with identifying outliers for collocation and overhead costs and the penetration of second lines (at 25-26). Through simple examples, they suggest that the merger would reduce the Commission's ability to benchmark

> both through reducing available information if ILECs do not change their substantive behavior, and also by worsening their incentives under benchmarking (at 27).

52. At the outset, it must be recognized that the alleged damage to the Commission's ability to regulate is speculative and unquantified, though the use of examples lends an appearance of quantification that may be misleading. For example, the authors claim—incorrectly, as it happens—that a merger that reduces an industry from 8 to 4 firms would more than double the posterior variance of some (hypothetical) industry performance parameter of interest to the regulator. While this loss of precision sounds precise—the posterior variance increases from $(7/40)s^2$ to $(15/40)\ s^2$ —the authors are silent regarding the cost to society of such an increase in the variance of the parameter.[48] Halving the precision with which some parameter can be measured could be costly or it could be irrelevant, depending on such factors as the nature of the parameter, the Commission's ability to obtain the same information with the same precision after the merger by other means, the sensitivity of Commission actions to the value of the parameter and the welfare loss from incorrect Commission actions. In this sense, the Farrell-Mitchell results are speculative and certainly provide no quantitative guidance to the Commission regarding the magnitudes of the effects they cite on the Commission's ability to regulate.

53. There are also technical problems with the results. The basic theoretical idea of the Farrell-Mitchell paper—that the merger reduces the number of observations available to the regulator

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[48] s^2 is the standard estimate of the sample variance. It measures the average magnitude by which the observations vary from the mean. The closer the observations lie togther, the lower s^2 will be.

which, in turn, decreases the statistical precision of parameter estimates based on those observations—is at odds with the facts of the telecommunications industry and rests on shaky statistical grounds. The telecommunications industry has changed considerably since the passage of the Telecommunications Act of 1996 in ways that affect regulatory benchmarking:

- the number and quality of benchmark comparisons available to the regulator has increased markedly despite increased concentration among large ILECs;
- the role of the regulator in protecting captive customers through benchmarking is changing, as the major interstate customers of the ILECs do their own benchmark comparisons; and
- the change in ownership brought about by the merger would not materially reduce the information available to the regulator.

In addition, the statistical underpinnings of Farrell-Mitchell's examples are questionable. In particular, the assumption of statistical independence is frequently made in the examples, and when a merger is modeled as combining data from the merging firms, the assumption that the observations are statistically independent gives an extreme measure of the loss in precision stemming from a merger. Also, the two major examples—illustrating the cost of reduced information and the cost of distorted incentives—are simply misleading.

A. The number and quality of benchmarks is large and increasing rapidly.

54. Farrell and Mitchell conclude that

> (t)he loss of one of a relative handful of large ILECs would substantially damage efficient regulation, including the interconnection regulation necessary for the growth of competition in local exchange and exchange access markets.

For regulation in general, and in particular for interconnection regulation, the set of firms for benchmark comparisons is much larger than 5 RBOCs plus GTE. Local exchange telephone companies are regulated in each state in which they operate, and state regulators typically exercise independent jurisdiction over communications services provided in their state. As a result, important characteristics of communications service (e.g., costs, prices, service offerings,

investment, technology deployment) all vary across states even within operating telephone companies or regional holding companies. For example, state regulators frequently compare local interconnection and retail service prices across states as a guide to the reasonableness of the prices proposed in their state. The standard industry source for detailed demand, cost, pricing and investment data for local exchange telephone companies is the FCC's *Statistics of Communications Common Carriers* which has been published annually since 1939. As of December 1996, data were reported individually for 51 separate ILECs accounting for more than 90 percent of U.S. phone lines.[49] Moreover, the SBC-PacTel and Bell Atlantic – NYNEX mergers did not reduce the number of independent observations available to regulators, competitors and the public: the preliminary *Statistics of Communications Common Carriers* identifies the same 51 ILECs as of December 1997 in Tables 2.7 and 2.9, despite the consummations of the mergers in April and August of 1997.

55. Telephone companies other than RBOCs and GTE are used for comparison purposes. Farrell and Mitchell (at 23-24) cite the case of physical collocation where data from 14 operating telephone companies were used to calculate industry average direct costs for various collocation services. The sample included separate operating entities of RBOCs (e.g., New York Telephone and New England Telephone Company) and large independent telephone companies (e.g., Cincinnati Bell, Lincoln and Rochester). Sprint's stated concern that

> by reducing the number of benchmarks by which performance can be measured, the merger significantly enhances the ability of all RBOCs (and GTE) to act in anticompetitive ways without successful regulatory interdiction[50]

regarding the development of new interconnection standards for its proposed ION ignores the obvious: it will be able to monitor and compare ILEC performance using its own local exchange companies as a benchmark. Sprint is the second largest non-Bell local exchange

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[49] Federal Communications Commission, *Statistics of Communications Common Carriers*, 1996/1997 edition, at vi.

[50] Sprint Petition at 28.

carrier, serving approximately 7.4 million access lines.[51] It is obviously knowledgeable and experienced as both an ILEC and an IXC, having effectively negotiated from both sides of the table. A starting point for Sprint to judge the willingness and ability of ILECs to accommodate ION would be the success of its negotiations and integration in Sprint/United territory.

56. Benchmarking data also come from new firms entering local exchange and exchange access markets. These firms are frequently very different from ILECs; they use different technologies and different back-office systems, provide different mixes of services, etc., so that the new observations that are available are likely to be independent of and different from the corresponding observations for the large ILECs: the RBOCs, GTE and Sprint-United. The recent mergers between CAPs and IXCs provide a new form of vertical integration (combining exchange, exchange access and interLATA services), and observations from AT&T/TCG and MCI WorldCom/MFS/Brooks Fiber add considerably to the Commission's and competitors' ability to benchmark local exchange telephone companies.

57. By fostering the National/Local strategy, this merger will also generate significant new benchmarks for comparing ILEC performance. The National/Local strategy creates a new form of local telephone company—the ILEC operating as a CLEC out-of-region—which expands, rather than contracts, the scope for benchmark regulation. MCI WorldCom itself argues:

> ...ILECs are uniquely situated to challenge the discriminatory interconnection and pricing policies that are slowing entry by other carriers. State Commissions ruling in arbitration proceedings face a significant information asymmetry problem. An out of region ILEC would be an extremely credible participant in an arbitration proceeding. Thus far, no ILEC has attempted to enter local markets out-of-region on any significant scale.[52]

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[51] *1996-1997 SOCCC*, December, 1997, Table 1.1.

[52] "Declaration of Kenneth C. Baseman and A. Daniel Kelley," Attachment to the Comments of MCI WorldCom in this Docket at ¶9. The concluding sentence of the paragraph "However, the more ILECs there are, the more likely it is that one of them will break from the cartel" makes no sense where members of the alleged cartel serve in distinct geographic markets. Economies of scale and internalizing externalities by following customers into multiple

(continued...)

The merger and the National/Local strategy promise to create such a competitor, and while ILECs are hardly "uniquely situated," subsequent entry of SBC into out-of-region markets as a CLEC will generate valuable data on costs and prices. Comparison of SBC's in-region and out-of-region exchange and exchange access services, for example, may enable the Commission to isolate the effects of incumbency with a precision that would be unavailable without the merger.

58. Finally, the ability of the regulator to observe data from a wide range of different telephone companies has undergone a quantum increase since the passage of the Telecommunications Act of 1996. The measurements that the Commission has used and tracked have proliferated over time, and every year, each data series is lengthened by one more post-divestiture observation. The quality and independence of these observations increases as well, as every year that passes reduces the similarities of the RBOCs stemming from their common ancestry in the old Bell System.[53]

B. The regulators' role in benchmarking is diminishing.

59. According to Farrell-Mitchell, benchmarks are useful regulatory tools to overcome the regulators' informational disadvantage relative to the regulated firm (at 8). However, with the implementation of the Telecommunications Act of 1996, the Commission's regulatory task has shifted, and parties with a greater incentive to overcome informational asymmetries have been given the necessary tools. Today, sophisticated CLECs compare offerings for unbundled network elements across operating telephone companies, across states and, even within a state, as well as across offerings to other CLECs and ILECs. Section 252(h) of the Act requires that each of the thousands of interconnection agreements that have been signed be submitted to state

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(...continued)

markets are reasons why firms that serve larger territory would be more likely to engage in a National/Local strategy.

[53] For example, at divestiture, most RBOCs used Western Electric switches nearly exclusively. There is much more variation today in the manufacturer of switches in the ex-Bell operating companies' networks.

regulators for approval and made available for public inspection. Many of these agreements are, in fact, posted on the Internet, and a variety of news organization and regulatory databases compile these agreements for comparative purposes. These interconnection agreements frequently contain specific, measurable quality standards subjecting the ILEC to financial penalties for substandard performance. In the access markets, IXCs and ILECs negotiate quality standards against which IXC report cards monitor ILEC performance.

60. In addition, the ILEC itself has become a benchmark against which the quality of the wholesale services it offers to CLECs who interconnect or purchase unbundled network elements is measured. Section 251 of the Act requires that interconnection quality provided to CLECs be equal to that provided to the ILEC itself or any of its affiliates, and for RBOCs like SBC and Ameritech, nondiscriminatory access to network elements includes OSS which the Commission has interpreted to mean that

> (f)or those OSS functions provided to competing carriers that are analogous to OSS functions that a BOC provides to itself in connection with retail service offerings, the BOC must provide access to competing carriers that is equal to the level of access that the BOC provides to itself, its customers or its affiliates, in terms of quality, accuracy and timeliness.[54]

For these functions, elements and services, it is unnecessary to compare standards across RBOCs. To detect anticompetitive discrimination in the supply of these elements, the proper comparison is between the ILECs offerings to CLECs and the elements it uses itself or offers to its affiliates.

61. Finally, since the implementation of the Act, these new benchmarks have become portable. The "most-favored nation" clause ("MFN") of Section 252(i) requires the local exchange carrier to make available any interconnection service or network element supplied in any agreement approved under Section 252 to any other telecommunications carrier under the same

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[54] *In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934 as amended, To Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, August 19, 1997 at ¶139.

terms and conditions. Thus CLECs have every incentive to seek out and observe the terms and conditions their competitors are negotiating with the ILEC and ensure that their interconnection arrangements are equally satisfactory. Moreover, the merger may extend the range over which ILEC proposals regarding unbundled elements and interconnection apply to other CLECs.

C. The merger does not materially reduce the information available to the Commission.

62. An important premise of Farrell-Mitchell's examples is that important data from independent random variables will no longer be available to the regulator or the industry as a consequence of the merger. That assumption exaggerates the likely effect of the merger of telecommunications companies. First, Farrell-Mitchell's examples generally focus on unobservables (e.g., the cost of collocation in an efficient firm). For observable data (e.g., prices, quantities, investment), the merger is unlikely to reduce the number of observations. A large amount of network, financial and technical data is generated at the operating company level (e.g., data in the ARMIS reports or the *SOCC*), and state regulators also require intrastate measurements for services that are functionally identical to the interstate services regulated by the FCC. Much of the data routinely collected by the FCC are also reported at a study-area level of aggregation, and the merger has no effect on study areas. Finally, a great deal of telephone company data naturally varies by operating entity because of differences in geographic markets, customer density, loop length, terrain, etc. which give rise to differences in costs, demand, investment, technology diffusion, etc. These data will remain available, and concentration of ownership in the industry will not reduce the diversity of available observations or the accuracy with which regulatory parameters can be estimated.

63. As the Commission moves away from embedded, historical costs and demand for pricing services, the need for individual company data diminishes. The interstate price cap plan for local exchange carriers generally requires no routine collection of data at the individual company level to run the plan. The cost proxy models used to set interconnection and

unbundled network element prices[55]—and recommended by the IXCs for use in setting access prices prescriptively—make little use of individual company data. The models are designed to be independent of any particular ILEC's technological choices or cost-minimization efforts, so that the merger would have no effect on best-practice regulation based on TELRIC principles.

D. Farrell and Mitchell's statistical examples are flawed.

64. The IXCs' basic framework assumes that a merger will reduce the number of observations available to the regulator, and that fewer observations will significantly decrease the usefulness of the inferences that can be drawn from those observations. We show above that the number of observations used by regulators in telecommunications is large and increasing and that the merger does not decrease this number. However, if it did, the magnitude of the effect of reducing the number of observations on the quality of inference the regulators can draw from the data would depend critically on Farrell-Mitchell's assumption that the observations from the merging RBOCs are statistically independent. If those random variables are positively correlated, it is generally true that the effect of combining observations on the precision of estimates is less than if they are independent.

65. Assume observations from two firms are normally distributed around the population mean b with possibly different variances, but the distributions are not independent. The sample mean of the two observations has expectation b and variance $(1/4)(\sigma_1^2 + \sigma_2^2 + 2\rho\sigma_1\sigma_2)$ where ρ is the correlation between the observations. With equal variances and perfectly correlated observations, the precision of the sample mean from 2 observations is the same as the precision from a single observation. Obtaining an additional observation perfectly correlated with the current sample is worth nothing in terms of improving the precision of inference. In general, additional observations are not worth as much when those observations are positively correlated with other observations. For many data series, it would be expected that observations from two RBOCs would be positively correlated; the presence of common unobserved factors which vary

[55] Prices for interconnection and unbundled network elements are generally set by state regulators at Total Element Long Run Incremental Cost ("TELRIC").

over time and affect both firms similarly would give rise to such positive correlation.[56] Hence, the Farrell-Mitchell assumption that observations from firms are statistically independent of one another is likely to be violated in the telecommunications industry and likely to result in an overstatement of the value of an additional observation in their examples.

66. Two specific benchmarking problems are raised in the Farrell-Mitchell declaration. First, it states that if a merger leads to more aggregate reporting of data, information of value to the regulator is sometimes lost which limits the Commission's ability to measure parameters with precision. Second, it states that mergers between firms whose performance will be compared in the future by benchmarking can set up adverse unilateral incentive effects, because the merged firms will internalize the effects of the regulator's comparison of their performance. These problems are illustrated with simple examples; we show below that these analyses do not generally support the propositions for which the authors offer them.

1. The illustrative loss in precision from the merger is an artifact of the sample size and the prior distribution.

67. Farrell-Mitchell make the general observation that

> losing information on variation among ILECs may rationally cause a loss of the confidence needed to use an average as a benchmarking and may make regulators or competitors more tentative in their use of such averages (at 31)

which they purport to illustrate at 32-33. The authors assume a standard Bayesian framework where the n random variables x_i (i=1,...,n) are independent and identically distributed, having unknown mean b and variance σ^2.[57] To express the view that the Commission has no prior

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[56] For example, the costs of providing a particular service might be dependent in part on the cost of acquiring certain equipment sold by third party vendors. While different BOCs might negotiate different unit prices or use different equipment configurations at the margin, there would be a positive correlation regarding a significant component of their costs.

[57] Recall from Statistics 101, the basic idea of Bayesian inference: the statistician expresses her prior belief about b in the form of a probability distribution. Data is then gathered which gives sample information about b. These two distributions are then combined through Bayes' Rule to derive the posterior (post-data) distribution of b which the analyst uses to make (continued...)

information regarding the unknown mean and variance, Farrell-Mitchell use so-called "uninformative" prior distributions where b and $\log(\sigma)$ are taken to be uniformly distributed over the real line.[58] They then show that the posterior distribution of b has variance given by $(n\text{-}1)s^2/n(n\text{-}3)$, where s^2 is the sample variance. Farrell-Mitchell model the effect of a merger by assuming that 8 firms merge pairwise into 4 and that the average observation for each pair would replace the individual observations which would no longer be available to the regulator. Applying the formula, Farrell-Mitchell claim that the variance of the posterior distribution of b more than doubles from $(7/40)s^2$ to $(30/40)\ s^2/2$ as a consequence of the merger, from which they conclude that

> (o)bserving only pre-averaged data increases the posterior *variance* of b, because the observer has less information and thus must be less confident....The result of this (semi-hypothetical) wave of ILEC mergers is that (in prior (*sic*) expectation) the posterior variance on b more than doubles. As a result, the Commission must be less confident in its estimate of industry performance and more circumspect in establishing any performance standard. (at 33)

The conclusion does not generalize from the example. Except where the number of observations is small and the prior distribution of the parameters dominates the posterior distribution, the example shows that replacing individual observations with the average of those observations has no effect on the precision of the parameter estimate.

(...continued)

decisions. With very little data, the posterior distribution will look like the prior distribution; as the sample size gets large, the posterior distribution generally begins to look like the sample distribution.

[58] A random variable is uniformly distributed over some finite interval if the probability that it lies in any region of the interval depends only on the length of the region. The uninformative prior distributions used here extend that notion from a finite interval to the entire real line $(-\infty, +\infty)$. The distribution is technically improper—the probability that b lies in any finite interval is 0—but it is commonly used to express the prior belief that the parameter could be anywhere.

68. The Farrell-Mitchell claim should surprise practical-minded people. First, in the example, there is half as much data after the merger, but each observation is twice as precise.[59] It would thus seem odd that the regulator would have to be more circumspect—possibly more than twice as circumspect—in the post-merger environment. Second, the fact that the variance of the posterior distribution "more than doubles" sounds more alarming than it really is. For inference about the mean, what matters is the standard deviation, not the variance, and simple arithmetic shows that if the variance doubles, the standard deviation increases by less than 42 percent.[60]

69. Two things are happening in the example. First, the fact that the variance is unknown means that halving the sample size is not precisely offset (for purposes of inference) by halving the variance. In classical inference, the expected length of a confidence interval about the mean measures the analyst's confidence in the results, and when the variance is unknown, that expected length depends on critical values from the "Student's" t distribution which vary with n when n is small. If the sample falls from 8 to 4, the expected length of the confidence interval about the mean increases by about 29 percent;[61] for a merger wave that reduces the operating LECs in the *SOCCC* from 50 to 25, the expected length of the confidence interval about the mean would increase by less than 3 percent.

70. Second, in the Bayesian framework used by Farrell-Mitchell, the difference for small n arises because the prior distribution is given large weight when the number of observations in the sample is small. The influence of the non-informative prior accounts for the difference between roughly a 29 percent increase in the expected length of the confidence interval (in the

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[59] Assuming independence, $\mathrm{Var}(x_1 + x_2)/2 = (\sigma_1^2 + \sigma_2^2)/4$ which equals $\sigma^2/2$ when the variances are equal.

[60] This example illustrates why the Farrell-Mitchell results, even when they contain numbers, give no clue as to whether a theoretical effect is large or important. The statement that the posterior variance "more than doubles" obviously suggests the effect could be significant for policy purposes; however, by choosing the power of the standard deviation to report, you can make the result appear as large or small as you wish.

[61] The ratio of critical values from the t-distribution increases by 34.6 percent as n goes from 8 to 4. The fact that the expected value of the standard deviation is not equal to the square root of the expected value of the variance accounts for the difference between 34.6 and 29 percent.

classical framework) and the 46 percent increase in the standard deviation of the posterior distribution in the Farrell-Mitchell Bayesian example. Of course, when the number of observations n is large, the influence of the prior is small, and the variance of the posterior distribution of b behaves as s^2/n, as we would expect from a sampling theory approach.

71. The example purports to show that what a Commission does when it lacks "strong *a priori* knowledge of the variance with which the observations x_i are distributed around the unknown b" (at 32) is adversely affected by the merger. While Commissions surely lack prior information about the variance of the benchmarks they monitor, they would be ill-advised to use a method of inference that depends on the (arbitrary) form their ignorance takes. Uninformative prior distributions are useful in real-world inference only when the choice of the form of the prior distribution has negligible effect on the posterior. Otherwise, the choice of several arbitrary ways of expressing the fact that the Commission knows nothing *a priori* about the population variance would come to dominate the inference the Commission makes after seeing the data.

72. In sum, the doubling of the variance of the Commission's parameter estimate is not an inevitable consequence of reducing the sample size through merger but rather is an artifact of the sample size and the prior information assumed by the analyst. If the 50 *SOCCC* operating companies merged to 25, the posterior standard deviation and expected confidence interval length would both increase by less than 3 percent. While under other circumstances, there can be some loss of efficiency in this stylized treatment of a merger wave, Farrell-Mitchell do not tell us when the efficiency losses are small or zero or when they are large. And, more important, they give no sense of the magnitude of the effect of a reduction in regulatory precision on the cost of regulation or the benefits consumers can hope to derive from it.[62]

[62] Of course, if the regulator continues to observe x_1 and x_2 after the merger, there will be no efficiency loss and no cost attributable to the merger.

2. The ratchet is wrong.

73. The second benchmarking problem discussed by Farrell-Mitchell is the alleged increase in the adverse incentive effects of average-practice benchmarking after the merger because the merged firm would be a larger fraction of the average (at 39). Farrell and Mitchell claim that this effect would "substantially worsen the ratchet effect created by periodic revision of the X-factor," and that when regulators use "industry-wide averages of cost performance, the larger the ILEC, the worse the ratchet effect" (at 40). The ratchet effect and the change in ratchet stemming from the merger are both exaggerated in the Farrell-Mitchell model.

74. First, the model differs significantly from the mechanism the Commission actually has used to review and revise the productivity in its price cap plan for LECs. Farrell and Mitchell's example (at 11-13 and 38-40) assumes that a $1 reduction in average cost per line today would increase profits for 4 years (diminishing over time because of discounting), after which the X-factor would be readjusted based on industry average cost reductions. All else equal, an ILEC that was 20 percent of the industry would thus expect to lose 20 percent of its $1 savings in the 5th year which effectively taxes away about 14 percent of its incentive to reduce costs.

75. In fact, the Commission's price cap plan has been revised twice. The productivity offset was initially determined by averaging together two price-based studies of industry productivity growth: a long-term study of interstate toll prices between 1928 and 1989 and a short term study of interstate access prices between 1984 and 1990. In 1995, a revision was made to the 1984-1990 study, and X was reset on an interim basis from a minimum of 3.3 percent to a minimum of 4.0 percent.[63] No new data were used, and no ILEC's X was increased due to efficiency gains between 1990 and 1995. In 1997, X was revised again to 6.5 percent and made

[63] *In the Matter of Price Cap Performance Review for Local Exchange Carriers*, CC Docket No. 94-1, First Report and Order, April 7, 1995 at ¶¶210-214. The original price cap plan included an optional X of 4.3 percent without earnings-based sharing. The revised (interim) plan included optional Xs of 4.7 or 5.3 percent with different sharing requirements.

permanent.[64] The revision changed both the method of setting X and the period over which X was measured. Instead of using an average of long and short term price trends, the Commission based X on historical growth in industry total factor productivity ("TFP"). Measurements were taken over essentially all of the time period since access charges began, and the final value of X was essentially an average of averages which dropped successive observations at the beginning of the period.

76. From this history follow three observations. First, it is unlikely that any ILEC anticipates that a productivity improvement it makes today will be systematically taken away in a future price cap revision. Each time X has been revised, the method of calculating X has been revised, and the process is too unpredictable to optimize against. Second, the entire history of productivity growth under access charges was used in the last revision, so that the revised X is based on a weighted average productivity growth over the whole period. Thus, for simplicity, if there were only one ILEC in the price cap plan, a hypothetical $1 of savings in unit costs would never be entirely taken away by revisions of X. Farrell-Mitchell's assumption that the entire productivity gain would be taken away at the first revision is contradicted by industry experience, and their resulting 14 percent tax of the ILEC's incentive to reduce costs is consequently overstated.

77. Second, and most important, if the Commission viewed the ratchet effect as important, it would have been a trivial exercise to eliminate the problem and thus the effect of the merger on the problem. Each company could have been assigned an X-factor simply by omitting its data from the calculation of industry-wide TFP and input price growth. Farrell-Mitchell (at 47) suggest that the Commission might have ruled out such "purifying" practices, not because it believed the incentive effect was small, but because (i) a common standard would no longer be applied to all firms and (ii) the resulting estimates would be statistically inefficient. However,

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[64] *In the Matter of Price Cap Performance Review for Local Exchange Carriers and Access Charge Reform*, Fourth Report and Order in CC Docket No. 94-1 ("*Fourth Report and Order*") and Second Report and Order in CC Docket No. 96-262, May 21, 1997, at ¶¶133-143.

(i) using the same data and formulas but omitting each company's data from the calculation of its X surely applies a common standard to each company and (ii) dropping one positively correlated observation from many would be expected to have a small effect on the precision of the mean, and the precision of the mean is a second-order effect in the calculation of the welfare loss from the ratchet effect.[65] In its discussion of its TFP methodology, the Commission never mentions the notion of sampling variation,[66] so it would be difficult to ascribe its reluctance to use a "purified" benchmark to concern that one fewer observation would somehow sink the statistical ship.

3. Conclusions.

78. While it is true that more data is always no worse than less ("the *n*'s justify the means"), it does not follow that reducing the number of observations through a merger halves the precision with which the Commission can measure important parameters or doubles the incentive tax on price cap ILECs from periodic review and revision of the productivity offset X. The efficiency loss from observing aggregate data depends greatly on the circumstances. In the simplest case, the effect is zero, but in other cases, it is certainly true that the regulator could estimate the unknown mean more accurately from more disaggregated data on individual companies. In practice, however, nothing about the merger suggests that data will no longer be observable at the individual company level. In both the universal service and price cap examples, state commissions have an interest in the outcome. Since their jurisdiction ends at the state border, data will be required for the operating entities in each state.

79. The reduction in incentives because the merged entity will be a larger fraction of the industry is similarly inapplicable and unquantifiable. If the effect were perceptible, the

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[65] The regulated firm's belief that its behavior will not influence the target value of X affects its costs, so that distortions in these incentives lead to welfare losses on every unit of output produced. Choosing the wrong X—being unable to estimate it precisely—causes prices to deviate from costs which leads to welfare losses on units of output inefficiently stimulated or repressed by the difference between price and incremental cost.

[66] See C.A. Bush and L. Huthoefer, "Estimation of TFP Under FCC Rules: FCC Synthesis," Appendix D to *Fourth Report and Order*.

regulator would change the review mechanism, just as the Commission abandoned the sharing of earnings because of its adverse effect on incentives.[67] In the price cap example, the Commission's review process produces a much smaller incentive tax than the one hypothesized in Farrell-Mitchell's simple model, and because the initial effect is negligible, so is the change in incentives from the merger.

E. A Practical Example.

80. Illustration of some of these ideas regarding the effect of mergers on benchmarking comes directly from Sprint's evidence in this Docket. Besen, Srinagesh and Woodbury question the claim that the merger would produce scale and scope economies and take us to task regarding our summary of the econometric evidence regarding economies of scale for telephone companies.[68] They cite our statement that

> (t)he economics literature does not suggest that current Regional Holding Company...sizes exceed minimum efficient scale. Econometric evidence of scale economies among telecommunications firms much larger than SBC or Ameritech suggest positive scale economies with no evidence of diseconomies of scale.

In rebuttal, they quote from the abstract of a paper and a "follow-up study" by J.S. Ying and R.T. Shin that, in their opinion "call(s) into question the claim that the merger would produce scale and scope economies."

81. In the paper (but not in the abstract), Ying and Shin summarize their results as follows:

> An easy but preliminary method of assessing LEC technology is to simply examine the parameter estimates. The first-order coefficients on the three output variables are all positive, less than one, and highly significant, as expected. In a multiproduct context, overall scale elasticity is calculated by summing the output cost elasticities. At the sample mean for all variables, it equals .9580. Increasing access lines, local and toll calls by 1% increases costs by slightly less

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[67] *Fourth Report and Order*, at ¶149.

[68] S.M. Besen, P. Srinagesh and J.R. Woodbury, "An Economic Analysis of the Proposed SBC/Ameritech Merger," Attachment A to the Sprint Petition, October 14, 1998 at 36.

> than 1%, indicating mild scale economies. When the overall scale elasticity is computed at Bell and non-Bell averages for all variables, both continue to exhibit increasing returns to scale, with the BOCs slightly more so. These results are comparable to those in Ying and Shin (1992), which are based on a sample of firms from 1976 to 1987.[69]

While the authors go on to test for the global subadditivity of their estimated cost function, their tests for natural monopoly correctly involve costs measured at output configurations very different from those in the sample. These findings do not contradict our stated view that current RBOC sizes do not exceed minimum efficient scale and that scale economies exist at current output levels. Moreover, since the scale and scope economies in question are measured at the level of the operating telephone company, not the holding company, their results have no bearing on our statement regarding Regional Holding Companies or on the effects of a merger of holding companies.

82. This exercise illustrates some of the benchmarking ideas we discuss above. The benchmark in question—characteristics of an industry cost function—was estimated for 58 operating local exchange telephone companies using as the principal data source the publicly-available FCC *SOCCC Report.*[70] Using this benchmark as an example, how does the proposed merger affect use of the benchmark? First, the benchmark represented by Ying and Shin's estimated cost function is permanent and does not disappear or change if firms in the sample merge or split. Because there is sufficient data in the past to obtain measurements of parameters the authors believe are accurate, future mergers among the 58 operating telephone companies would have no effect on the usefulness of benchmarks such as this. Second, for the same reason, there is no ratchet effect associated with the use of this benchmark; with this benchmark, LECs compete against historical industry costs which cannot be changed by current behavior no matter how large a fraction of the industry one firm becomes. Even if the study were continuously updated and used as a contemporaneous benchmark, the ratchet effect would be small because the

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[69] R.T. Shin and J.S. Ying, "Unnatural monopolies in local telephone," *RAND Journal of Economics*, Vol. 23, No. 2, Summer 1992 at 177, emphasis supplied.

[70] *Ibid.*, at 174. The number of firms in the sample differs from that in the *SOCCC* Report because the authors also used more disaggregated data available at the FCC.

sample consists of 58 (not 8 or 5 or 4) operating telephone companies. Third, and most important, the merger would have no effect on this benchmark—through either a change in the precision of the estimate or a change in the ratchet incentive—even if the benchmark were made contemporaneous, because the unit of observation is the operating telephone company, not the holding company. After a merger of holding companies, Ying and Shin's results would be unchanged. Only if the merger combined Illinois Bell and Southwestern Bell into a new operating company would the merger have any effect on the benchmark going forward.